TESTIMONY OF

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BUDGET, TECHNOLOGY AND FINANCE

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WRITTEN STATEMENT

Introduction

Good morning, Chairman Platts, Madam Vice-Chairman and Members of the Committee.

I am honored to have been asked to provide testimony here today on the Department's Unified Financial Management System (UFMS). Today, at your request, I will be addressing the Department's efforts to develop the UFMS and respond to the Government Accountability Office's (GAO) Report, "Financial Management Systems: Lack of Disciplined Processes Puts Implementation of HHS' Financial System at Risk, GAO-04-1008."

In June 2001, Health & Human Services (HHS) Secretary Tommy Thompson, through an Executive Memorandum, directed that a unified accounting system be established for the Department of Health and Human Services. The Secretary wanted to achieve greater economies of scale, eliminate duplication, and provide better service delivery. His mandate established the Unified Financial Management System (UFMS) Program, which is focused upon achieving the following **strategic objectives**:

- Eliminate redundant and outdated financial systems by implementing a modern integrated HHS-wide system
- Produce accurate, timely, reliable, and relevant financial information to help HHS managers make fact-based decisions to improve customer service
- Comply with applicable Federal financial management system requirements, accounting practices, and transaction standards
- Strengthen internal controls by instituting standard business rules, data requirements, and accounting policies across HHS
- Streamline operational activities to achieve more efficient and cost-effective business performance
- Continue to achieve unqualified audit opinions on annual financial statements

UFMS was designed as an integrated financial system for HHS and all of its operating components. It is not only a vital element of Secretary Thompson's vision of "*One HHS*," it is also responsive to the President's Management Agenda calling for more efficient and effective government.

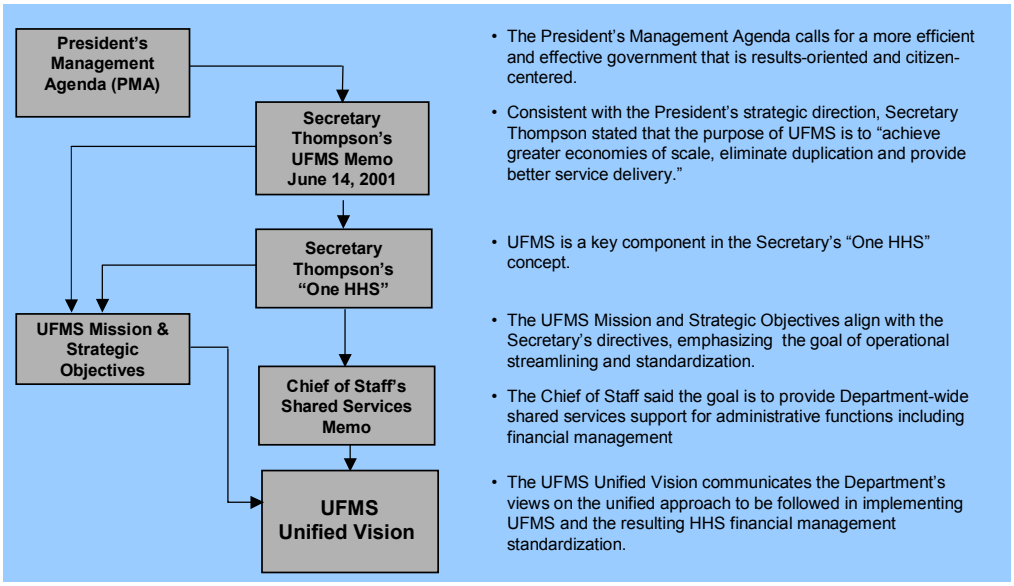

Figure 1: UFMS Unified Vision

The UFMS program is comprised of several large systems development efforts including the NIH Business system (NBS), the Health Integrated General Ledger Accounting System (HIGLAS) for Medicare Contractors, and the UFMS Global System for the rest of HHS. GAO's report was focused on the UFMS global effort and, therefore, I will direct my remarks to that aspect of the UFMS (see Appendix 1: HHS Response to GAO Recommendations for Action).

To appreciate the size of the systems development effort we have undertaken, one needs to appreciate the size and complexity of HHS. In terms of budget and programs, we have become the largest

department in the Federal Government, with almost a quarter of total federal outlays. In fiscal year 2003, HHS was responsible for $505 billion in net outlays. We administer more grant dollars than all other federal agencies combined. Our Medicare program processes more than 1 billion claims per year. Our Food and Drug Administration alone regulates products that represent 25 cents of every dollar in U.S. consumer spending. HHS total employment nationwide is 66-thousand employees. The total budget for the UFMS global is $209 million and the current estimated Return on Investment (ROI) is 15%.

We have one of the most complex accounting environments in the Federal government. HHS has multi-year as well as annual appropriations, entitlement as well as discretionary programs, loan programs, etc. This environment presents a major challenge in designing and developing a unified system.

Among the reasons UFMS is a more complex program than its name may imply are the following:

- HHS has a variety of organizational cultures in its operating components
- UFMS represents a change in the Department's traditionally decentralized financial management model
- Some operating components were implementing and/or pursuing new financial systems independently at the time of the Secretary's June 2001 memo

UFMS is one of HHS' most significant e-business initiatives. In addition to these challenges, the system implementation itself is daunting. Five "legacy" accounting systems are in use across HHS. They employ different technologies and disparate data definitions and are not electronically integrated. Implementing one financial system that can support the diverse, complex needs of each operating component requires significant collaboration across the Department. HHS is responding by building a knowledgeable team with representation from every operating component to address these challenges head on.

Benefits of UFMS

UFMS is designed to deliver the following benefits:

- Lower administrative costs, freeing up resources for HHS programs
- A more secure systems environment
- Capability for more timely and accurate information for management decision-making purposes
- Standardization and streamlining of processes and procedures across HHS
- Elimination of redundant systems and databases
- Capability for updating financial information in a timely manner
- Improved ad hoc reporting capability
- Allow HHS to meet the PMA standards including bringing the Department into compliance with the Federal Financial Management Improvement Act and eliminate material weaknesses

Our achievements in developing the UFMS to date include the facts that:

- All the agencies are going down the same path, supporting a UFMS vision.
- Successful conference room pilots (CRPs) were held at CDC, FDA, and the PSC; these helped demonstrate some of the system's functionality.
- There is agreement on consistent accounting treatment according to USSGL.
- We've streamlined the business processes and anticipate reducing the number of reports.

Strategies for Achieving Success

Throughout the implementation process, we have stressed the need for management involvement, and the UFMS governance structure ensures that involvement. We have deputies from all HHS operating components participating in the Steering Committee. Operating component Chief Information Officers (CIOs) and Chief Financial Officers (CFOs) sit on the Planning and Development Committee. Operating component staff are involved in the business analysis, technical analysis and business transformation teams.

As stated above, the implementation of a unified financial system will foster a significant organizational transformation for HHS, a department that has traditionally followed a decentralized approach to financial management. Although this initiative relies on technology, it is at the core, a business transformation initiative. From the outset, HHS acknowledged the significance of business transformation activities as a critical success element for the program.

There are several strategies we employed that were specifically derived from best practices and lessons learned, always focusing on the outcomes desired:

- Executive commitment
- Focus on cultural transformation for complex organization
- Investing in change management from the beginning
- Individuals who know the business are involved to ensure the business requirements will be met
- Widespread participation and support across all HHS operating components
- Limit scope to core financials
- Use phased implementation strategy to reduce risk
- Reuse assets of other agencies
- Use detailees from HHS operating components to insure built-in agents of change and knowledge transfer, and thereby avoid building another federal bureaucracy
- An innovative multidimensional and blended training strategy

The Challenge

From the outset, the UFMS team understood that the implementation of a *unified* financial management system across HHS posed technical as well as significant organizational and operational challenges. History tells us that most large system implementation projects fail. Sources report that these failure rates fall between 50-80%. The challenge--how could we ensure success, especially considering the complexity of bringing together twelve separate operating components and five accounting systems?

Strategy for Implementing the Unified Financial Management System

I would now like to focus my comments on the important topic of the UFMS implementation approach that HHS chose at the inception of the program. The GAO report offers a critique of the UFMS implementation as at risk due to the lack of a disciplined approach. However, HHS' approach is not only disciplined and appropriate for implementing commercial software, it has in fact kept the UFMS program in reach of success. The UFMS implementation plan does contain significant risk, but is supported by a risk mitigation process, which is carefully managed daily., I would like to share with this subcommittee how HHS has, from its inception, viewed the UFMS system development philosophy.

To this end, please allow me to explain how the four key facets of the UFMS implementation approach have set the program on a path to success.

Management Vision and Governance

As mentioned earlier, the UFMS program began with a vision by Secretary Thompson in 2001. We have kept aim on that vision ever since. In the first eight months of this program HHS managers, together with a system integrator and Independent Verification and Validation (IV&V) partners, focused on completing a clear, compelling business case and a detailed UFMS implementation plan. Several management directives and implementation processes were put in place as a result of this work that we have followed with great discipline. One of the key management decisions that we made during the planning phase of UFMS was to manage this program as a business transformation initiative and not just a system development program. This meant that we had to ensure that the transformation would occur in a manner that produced benefits along the way. First, we had to construct approaches and management frameworks to ensure that business requirements for financial and accounting operations were met by the system. We chose to meet this challenge by adapting HHS financial business processes to commonly accepted practices in financial management that are already designed into the Oracle software application. As discussed in a recent Government Computer News (GCN) article, "Agencies Get Out of the Box", federal agencies are on an upward trend in using commercial software to change financial business practices. In 2003, ten of thirteen federal agencies used commercial software as the foundation for their core financial system implementations.[1] The UFMS program is a significant part of this trend. As we move down this path we are doing some important things:

- We are following industry accepted implementation methods that focus on requirements management, quality assurance, risk management and configuration management to configure the software for the business needs of HHS.[1]
- We collaborate with and leverage the collective lessons as well as assets of other federal agencies who are implementing or have already deployed the Oracle Federal Financial software.
- We have expended a great amount of energy and focus on communicating our UFMS business objectives and training the workforce on how to use the system. This will drive a steeper ROI curve by ensuring that our employees are ready to operate our new financial business model well in advance of the UFMS deployment.

The last point is important because, from inception, HHS has believed that building new competencies and acceptance for the UFMS is the path to achieving the Return on Investment (ROI) documented in the original UFMS business case.

As described earlier, to ensure that this business-centric approach is executed effectively, we designed a multi-faceted governance structure for UFMS that drives program decisions from key business and technology managers from all of the HHS operating components. Figure 2 below depicts the structure and components of the UFMS governance structure.

[1] GCN, August 30, 2004, Vol. 23, No. 25 "Agencies Get Out of the Box", by Jason Miller

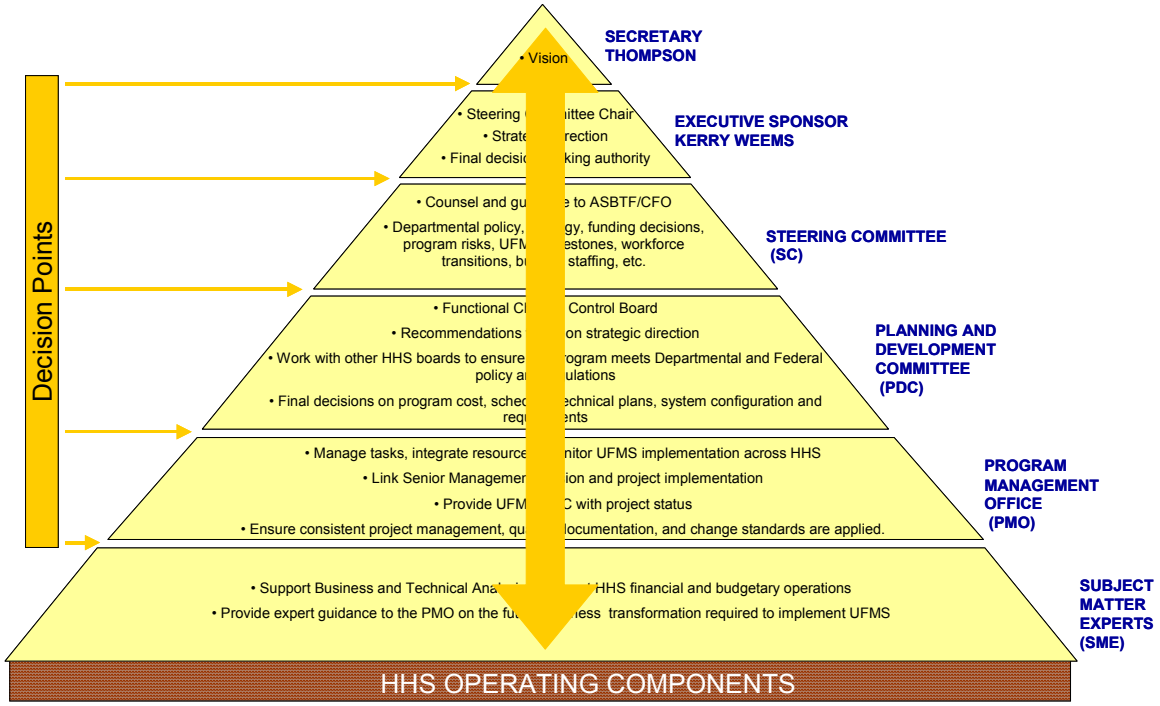

Figure 2: UFMS Governance

For the past two years this governance organization has provided great benefits to this program such as:

- Serving as an best practice governance model and forum for collaborative management between UFMS and other HHS enterprise initiatives such as eTravel and eGrants
- Executive leadership from HHS operating components that communicates the UFMS strategic goals and the importance of participating in the program to their operating components and build support throughout HHS and to external stakeholders.
- Clearly defined lines of demarcation between UFMS strategic direction setting activities and daily program management. The UFMS Steering Committee keeps the program aimed at strategic goals and stays abreast of federal management agendas and their impacts on the program. The UFMS Planning and Development Committee, comprised of the CIOs and CFOs of all HHS operating components, oversees performance of the program at a more tactical level

and makes recommendations to the UFMS Steering Committee on matters related to the strategic direction and pace of this program.

I am confident that the UFMS governance organization and management processes are among the most effective for this type of program anywhere in the federal government.

UFMS Concept of Operations and Requirements Management

I would like to cover a few thoughts on the UFMS concept of operations and how this relates to the requirements development and tracking that we are managing during the implementation. GAO's report points out that a good Concept of Operations document "should contain a high-level description of the operations that must be performed, who must perform them, and where and how the operations will be carried out." This approach defines only one means of successfully deploying a system – building a complete Concept of Operations at the start of the program. It also presupposes that a natural constituency for the system already exists. HHS is composed of a broad group of operating components with diverse missions that share the common objective of securing the public health and welfare of the American people. With this long history of autonomy, building a case for UFMS as a "Unified" system has been a huge undertaking.

We started with the components of the Concept of Operations that we could define. Over the course of the first year of the program, HHS held numerous workshops focused on the "Case for Change," "High Level Business Processes," and finally "UFMS System Requirements Specification." These efforts laid the groundwork for what would follow and continued the process of building the necessary organizational support for the program. In short, HHS leaders unified employees before we began unifying a system. Figure 3 below depicts some of the thinking we completed along this vein.

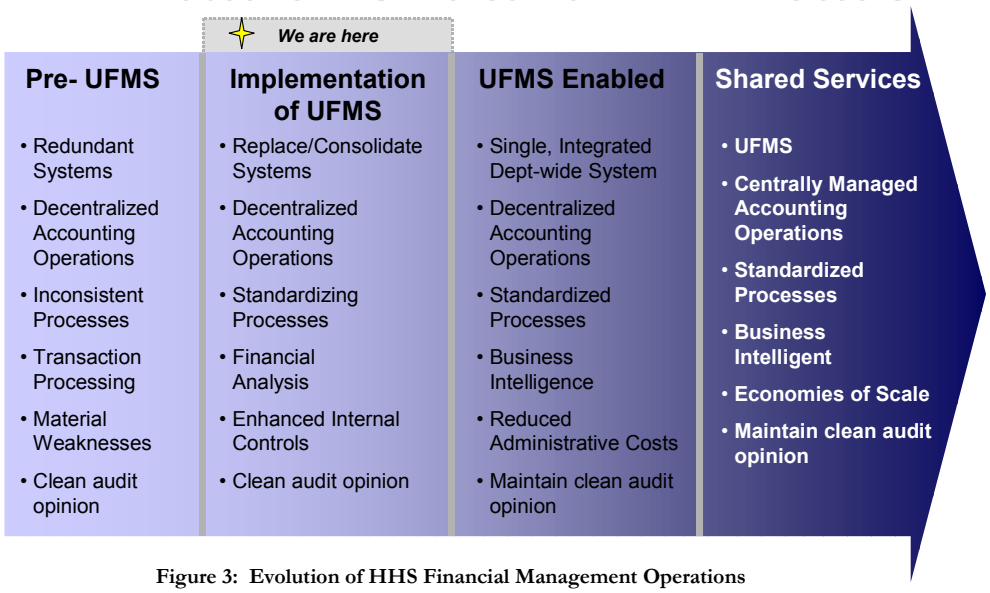

Figure 3: Evolution of HHS Financial Management Operations

As UFMS moved through the COTS implementation life cycle, we attained additional buy-in through the use of Conference Room Pilots, commonly referred to as CRPs, training classes, workshops and other events aimed at building competence and adoption around the new system. The CRPs, in particular, brought a broad base of managers and users together for live demonstrations of the evolving UFMS system. I participated in several of these CRPs and am proud to report that they met their objective. We now have broad support across HHS for the new financial system.

With a supportive and educated user community in place, HHS was finally able to complete the last stage of the overall concept for UFMS. We embarked on a shared services study to determine the "who" and "where" of the UFMS Concept of Operations. In late 2003 we contracted to perform the study and deliver several options to the department. These options were vetted with the operating components and a final course of action selected. This was documented in the "Financial Shared Services Study Concept of Operations" in April 2004.

In COTS systems, requirements statements need to be more flexible and less specific since COTS products are designed to meet the needs of a marketplace instead of satisfying the needs of a particular organization. The UFMS implementation is focused on refitting existing HHS business practices to use the software as the vendor designed it and configuring the software to meet the needs of the HHS business. Let me cite a couple of examples of how our business practices will change as a result of implementing the software's inherent capabilities.

The HHS Common Vendor File – Today, each HHS component agency maintains separate vendor files. UFMS requires a single common vendor file. The single vendor file supports the transition to the Common Contractor Registry (CCR) for all HHS Agencies and will enable our managers to perform vendor performance and other procurement analyses across agencies. This capability will also give HHS the foundation for analyzing past and current contracts with our vendors. With the common vendor file, HHS can more effectively manage and negotiate better contractual arrangements with our vendor partners.

Shared Accounting Data – Currently, HHS maintains accounting data within separate databases at each Agency, with little commonality in structure or format. UFMS is being implemented to take advantage Oracle's ability to share data values such as for HHS-wide accounting segments that support financial processing and reporting. This will promote efficiency in maintaining common data elements, and enable more effective department-wide reporting and analysis on HHS programs.

Note that in each of these examples we are embedding better capabilities that prepare us to fulfill our vision of unifying our operations and implementing a more robust accounting shared services business model. We built the Concept of Operations one step at a time along a deliberate path to achieve the necessary support from all HHS operating components. It was the right path.

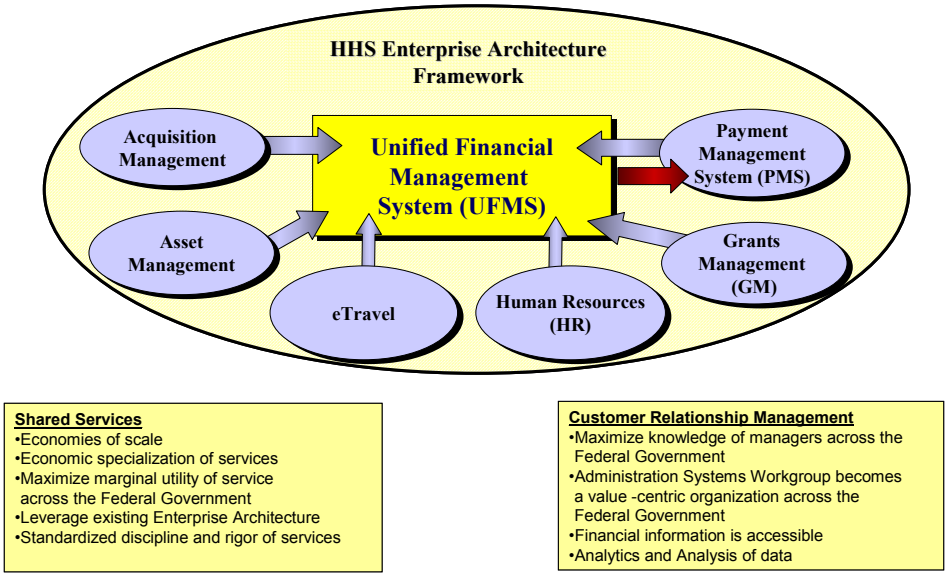

Figure 4: HHS Enterprise Architecture Framework

Sound Implementation Strategies

The UFMS program is driven by several guiding implementation strategies aimed at reducing risk and ensuring the program's success. First, we decided that HHS must base its financial system implementation on standards. With UFMS we are implementing standards for the selected technology platform, data management and business processes. We chose a commercial software package, Oracle Federal Financials, as the technology standard. This decision supports the goal to streamline financial operations and processes and reduces business and financial system complexity. With this new technology platform HHS can now design and enforce financial data standards for transaction processing, data exchange and reporting. For example, we have developed a budget and accounting classification structure (BACS) that is JFMIP-compliant and gives us common data elements, naming conventions, organization of general ledger data and other attributes that all of the HHS operating components use for accounting. We have been and are designing common interfaces with the HHS

administrative systems that feed the UFMS. This gives us additional control over how financial data is exchanged and significantly reduces the amount of work across HHS that is required to maintain data exchange mechanisms. Finally, and most importantly, collaborative efforts across HHS to redesign and streamline processes and internal controls have resulted in a unified business model that links operating components through process standardization. As you'll see later in this testimony, we have spent much implementation effort focusing on building the competence and confidence of employees in the UFMS capabilities to ensure that HHS requirements are met and the Secretary's vision is achieved.

A second implementation strategy is aimed at limiting the scope of business and system transformation efforts to the core financials capabilities as defined by the Joint Financial Management Improvement Program (JFMIP)[2]. Table 1 describes the mandatory JFMIP core financial management functions within the scope of the UFMS Program.

Continuing to adhere to this principle enables us to exert better control over the UFMS implementation timeline, investment, and other related risks.

[2] "Core Financial System Requirements" (JFMIP-Sr-02-01, November 2001). JFMIP uses these requirements to certify vendors' COTS packages as meeting the core financial functionality required by Federal agencies.

Table 1. JFMIP Mandatory Core Financial Management Functions

Function	Description
Core Financial System Management	Processes necessary to maintain system-processing rules consistent with established financial management policy. Sets the framework in which all other core financial system functions operate. This function includes the: ■ Accounting classification management process ■ Transaction control process
General Ledger	The central function of the core financial system provides summary information and maintains account balances by fund structure and individual accounts. This function includes the: ■ General ledger account definition process ■ Accruals, closing and consolidation process ■ General ledger analysis and reconciliation process
Funds Management	Primary tool for ensuring that HHS does not obligate or disburse funds in excess of those appropriated and/or authorized by the Congress. This function includes the: ■ Funds allocation process ■ Budget execution process ■ Funds control process
Payment Management	Provides appropriate control over all payments made by or on behalf of HHS. This function includes the: ■ Payee information maintenance process ■ Payment warehousing process ■ Payment execution process ■ Payment confirmation and follow-up process
Receivables Management	Supports activities associated with recording cash receipts, including servicing and collecting receivables. This function includes the: ■ Customer information maintenance process ■ Receivable establishment process ■ Debt management process ■ Collection process
Cost Management	Measures the full Federal Government cost of Government programs, their activities, and related outputs; essential for providing accurate program measurement information, performance measures, and financial statements with adequate disclosure of cost activities. This function includes the: ■ Cost setup and accumulation process ■ Cost recognition process ■ Cost distribution process ■ Working capital and revolving fund process
Financial Reporting	Provides financial information in a timely manner to support management's fiduciary role, budget execution, fiscal management of program delivery and program decision making, internal and external reporting requirements, and monitoring of the financial management system.

The development and implementation of UFMS, like other complex technology projects is inherently risky. HHS has chosen an implementation strategy that is well governed and aggressive. We have also prudently placed the UFMS under the scrutiny of an independent verification and validation (IV&V) agent who has the duty of monitoring, assessing and reporting on the rigor and execution of our management processes to senior leadership of the Department, including myself, in the UFMS governance structure. Indeed, the findings in the GAO report were issues that were previously identified as a result of this governance and IV&V oversight. Our approach to using an IV&V was validated by GAO's use of UFMS IV&V contractor's analysis in the GAO report.

Finally, UFMS is being deployed using an incremental, phased deployment strategy. The first success came with the deployment of a new Oracle financial system at the NIH in October of 2003. We will next deploy releases of the software at the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). As we develop the system we are using implementation processes and disciplines that are most appropriate for the configuration and deployment of commercial off the shelf software (COTS) applications. GAO cited in their report that UFMS was lacking in the manner in which we execute key disciplines such as requirements management, program management oversight and risk management. Because of these disciplines I am happy to report that, despite recent changes to the deployment schedule at one of our sites, the UFMS is a healthy program that is driven by an implementation team and workforce who are excited about the future of HHS financial management processes as they are implemented as a result of UFMS. We are proud of the fact that after almost 23 months of implementation progress HHS has met all UFMS major schedule milestones while simultaneously preparing the HHS workforce for the eventual release of the system into our business operations. We have also effectively navigated through control points that are designed to allow or disallow further progress until HHS management feels it prudent to proceed. A recent test readiness review (TRR) control point resulted in a modification of the software deployment strategy at one site to

allow additional time for system testing and defect resolution. We are confident that this type of discipline will continue to keep this program on a path to success, guided by informed and active HHS leadership and collaborations with industry partners.

A Focus on Business Transformation

Earlier in my testimony I mentioned that one of the UFMS implementation strategies is focused on ensuring that we manage UFMS as a business transformation initiative and not just a system implementation effort. This strategy has proven to be a correct one for UFMS and I would like to share a few thoughts on what we have accomplished at HHS so far and how we will ensure that the transformation continues to take place as the system is deployed.

At HHS we are confident that UFMS' past and future achievements in business transformation differentiate UFMS from other similar initiatives. A framework consisting of preparing leaders, communications, workforce transition and training drives transformation and change for the UFMS program. During the planning phase in 2002 the UFMS leadership designed into the governance and management structures a team of professionals who execute a full life cycle business transformation approach and framework that realizes the Secretary's vision and drives the needed changes across HHS to achieve that vision.

We are focused on the realities of what we must do to drive adoption of UFMS at HHS. At HHS we have many stakeholders who are actively engaged in pursuit of UFMS objectives. This includes everyone from the Secretary himself, executive leaders, union organizations and HHS employees. As the chart below shows, we are overcoming this one touch at a time with employees at HHS. It depicts the numbers of employee "touches" that we have achieved in our formal training sessions, system demonstrations, and workshops. We are succeeding in driving competency and adoption for UFMS.

Through an accumulation of many focused business transformation events like these we are impacting change and adoption of better ways to manage financial operations.

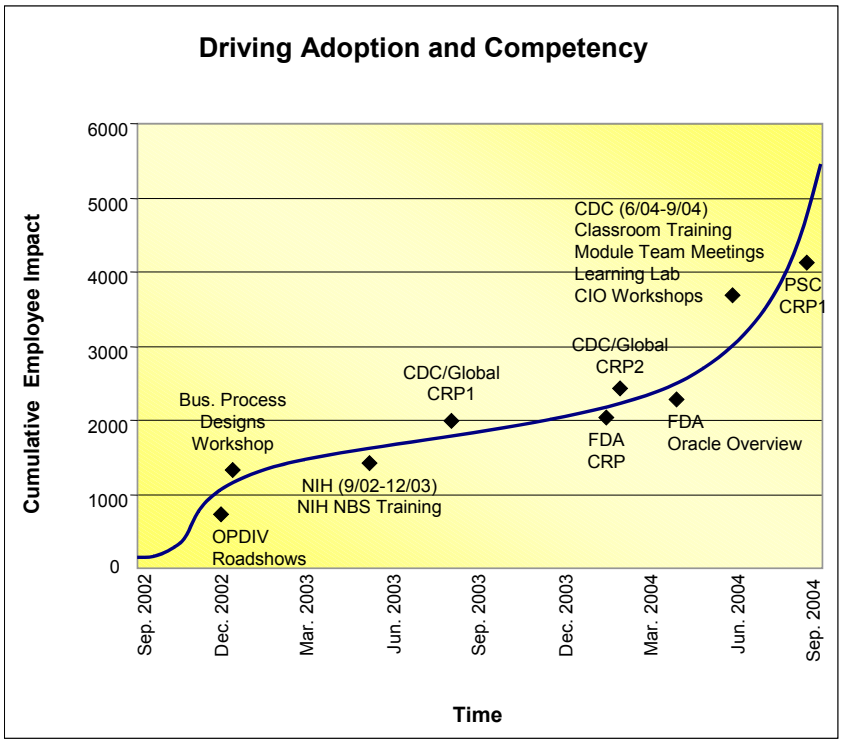

Figure 5: Driving Adoption and Competency

We have a creative and comprehensive communications program consisting of a website, newsletters, posters, emails and videos that communicate progress, benefits and other important facts about the UFMS program. For example, one of the most successful communications events to date was a "*Case for Change*" workshop conducted with senior HHS managers in September 2002 at the beginning of implementation activities. This workshop was aimed at early identification of UFMS critical success factors, benefits and barriers to success. As a result of this workshop leaders engaged with each other on these topics and actively participated in creating initial mitigation strategies for the issues identified. The knowledge and momentum gained from this workshop is still evident today among HHS leaders.

The UFMS training strategy is founded on adult learning theory, leading practices and lessons learned from multiple similar implementations in the Federal Government. It presents a blended learning solution that is anchored in a train-the-trainer approach. It also presents a series of highly integrated planning activities and workshops designed to build a robust learning infrastructure, including a wide network of UFMS super and master users. Curriculum development and learning activities are supported by a sophisticated training development platform, OnDemand. We planned training this way to account for the fact that the hundreds of people who will use UFMS not only have great diversity in their learning styles and preferences, but they are also geographically dispersed. We already see the positive effects of these efforts. Three years ago most HHS employees impacted by this business transformation had little confidence in the system. Today, many employees have already learned how to use the various modules that comprise the system.

UFMS Achievements and Successes So Far

UFMS is scheduled for completion in FY 2007. As mentioned earlier we at HHS are very proud of the accomplishments we have achieved in partnership with the systems integrator and IV&V agent. I would like to spend a few minutes sharing with the committee a chronology of some major milestones we have accomplished to date on the path to significantly streamlining and transforming financial operations and systems at HHS.

- **November 2001**. Awarded the UFMS systems integration contract to KPMG Consulting Inc. (now BearingPoint Inc.)

- **September 2002**. Completed detailed planning for the UFMS implementation. In this plan we laid a strategic roadmap for the implementation, documented approaches and strategies for executing a successful program, laid initial staffing plans, and described overall governance, risk management

and performance measurement frameworks. We submitted this comprehensive plan to OMB where it was well received.

- **November 2002**. Submitted the UFMS business case document to OMB. This document described implementation approach alternatives and respective cost-benefit analyses were considered in UFMS planning.

- **November 2002**. Formally kicked off CDC implementation.

- **August 2003.** Global/CDC CRP1 was conducted at the CDC with teleconferencing to our PMO office in Rockville, Maryland. CRP is a prototyping technique used to help determine and validate UFMS design and configuration. It takes the form of an interactive, scripted working session in which subject matter experts provide feedback on proposed configurations, business requirements, and organizational impacts and anticipated training requirements.

- **October 2003.** Successfully deployed Oracle Federal Financials at the NIH. The NIH served as the initial UFMS "proof of concept." Its overwhelming success signaled the green light for implementations at other Agencies. The NIH Oracle General Ledger, Federal Administration and Projects Accounting financial modules were deployed in September 2003, along with an Enterprise Single Sign-On capability and Single Point of Entry Portal. Gelco Travel Manager was also deployed in September 2003 with Oracle Accounts Payable, Purchasing, Accounts Receivable and Cash Management as sub-ledger financial support modules. (Note: NIH will migrate to the eTravel solution by end of FY 2006).

- **October 2003.** Formally kicked off the FDA UFMS implementation.

- **February 2004**. Approximately 100 staff representing all Regional Offices and Centers attended the FDA's CRP1. The FDA Commissioner, the CFO and the Deputy CFO made a special appearance.

- **March/April 2004**. Global/CDC CRP 2.

- **April 2004**. Formally kicked off the PSC/Customer Operating Divisions implementation. The event drew 100 participants and included speeches by me and other key leaders from across HHS. Presentation topics included program team structure and governance, major milestones and the importance of involving subject matter experts from the impacted communities in all facets of the implementation.

- **August 2004**: PSC CRP 1 was conducted over a two week period in Washington, DC. Over 180 participants from the PSC and its customer operating components attended.

- **October 2004:** Deployment of General Ledger and Payroll at CDC and FDA.

- **First Quarter Fiscal Year 2005**: Deployment of Grants processing capability at CDC

Deployment Strategy Update

The risk inherent in the HHS approach comes from an aggressive implementation plan, designed to begin securing value for the taxpayer and the HHS community at the earliest possible time. October 2004 was chosen as the aggressive goal for the pilot implementation in order to expedite discovery of system defects and increase chances that the system would go live in FY 2005. This strategy ensures adequate time to deploy a quality system in the event unsuspected technical issues and risks were uncovered. All things being equal, if a system functional capability becomes high risk for the pilot implementation, it can be deferred to a subsequent release without impacting the overall implementation.

One of the most challenging aspects of any COTS implementation is the continual management of the inter-related but sometimes competing priorities of cost, schedule, requirements, and resources. Early in

the program, the UFMS leadership team made the decision that incremental benefits from UFMS would be obtained through a phased deployment of the system. A well-defined set of phases was established. A core set of functional requirements will be available in the October 2004 release for Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA). Additional capabilities will be added in subsequent releases resulting in a complete, Department wide core accounting system in 2007. This is an industry best practice risk reduction technique, and also allows the UFMS program to give priority to meeting the October 2004 "go live" schedule for CDC and FDA.

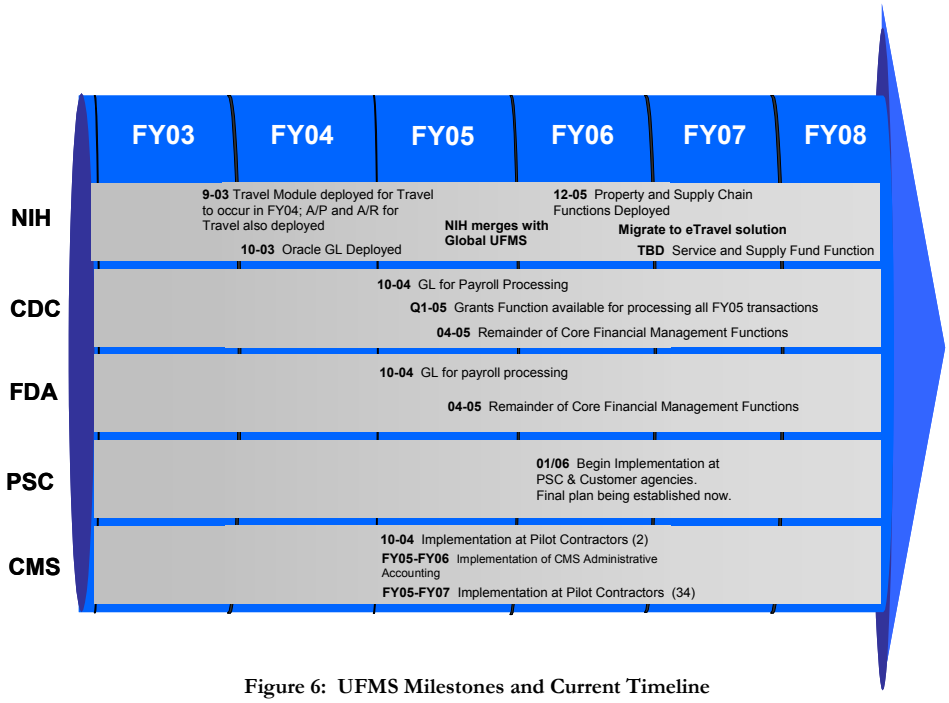

Figure 6: UFMS Milestones and Current Timeline

The flexibility afforded by the phased implementation approach, combined with the Capability Maturity Model (CMM) Level 3 compliant development processes, provide the balance necessary to manage the risks associated with an aggressive but achievable program schedule. One key risk in this approach, as GAO identified, is that the formal testing phase comes late in the overall timeline. This leaves limited time to resolve and retest unexpected issues as they are uncovered.

Testing Strategy

Testing of COTS software, like UFMS, takes on a significantly different focus from the testing of custom developed systems. A key reason for choosing a COTS software package is to leverage the investment made by the COTS vendor in producing a mature product that has been thoroughly tested. Very mature products, such as Oracle U.S. Federal Financials, require little or no low-level testing. It is sufficient to conduct functional testing to validate the application's ability to support HHS specific business processes. Consequently, the focus of the test efforts is system-level, and focused on code developed for HHS specific extensions and interfaces. The other important difference in COTS implementations is the inclusion of the Finance, Business, and Program stakeholders in the testing process. Industry experience has repeatedly shown that including key stakeholders in testing plays an important role in setting expectations and introducing future users to the system in a gradual way. The UFMS test effort is a multi-phased approach prefaced by Conference Room Pilot (CRP) activities, continuing with formal test activity, including unit, integration, and system testing, and culminating in a User Acceptance Test (UAT).

The GAO report takes issue with the timing of the testing in the program plan and HHS agrees that system testing ideally occurs earlier in the schedule. However, even though the testing occurs relatively late in the timeline, it is subject to extreme scrutiny and management oversight, with regular review meetings, daily summaries and detailed communication. All test scripts and results are rigorously tracked in "TestDirector," and testing teams manage defects on a daily basis. HHS believes that the majority of system defects will be identified as a result of this level of scrutiny, continuing heavy involvement in testing by Financial, Business and Program leaders, and the fact that UFMS is a very mature COTS product.

Each testing phase (CRPs, Unit-level testing, Integration Testing, System Testing, UAT) has a detailed plan developed that defines what will be tested, how it will be tested, where it will be tested, and who will test it. The results of each phase are recorded, defects noted, corrective actions taken, and functionality retested in each phase as necessary. A series of Go/No-Go checkpoints are built into these testing phases. These checkpoints had not yet been triggered at the time of the GAO review.

The UFMS implementation schedule for the CDC deployment was aggressive with significant risk in regard to meeting the October schedule. This led HHS to tailor its testing plans so that testing phases that normally occur sequentially have been allowed to overlap, but steps have never been skipped or eliminated. As testing has unfolded, HHS has taken the recommendations of the IV&V contractor and PMO and is analyzing system integration test results prior to deploying the first release of the system at the CDC and FDA. HHS does acknowledge GAO's comments that the testing of this system is occurring relatively late in relation to the October objective for deployment of the Global Pilot. At the time we prepared the response to the GAO report, HHS was analyzing system integration test results. This assessment resulted in a recommendation to the UFMS Steering Committee to modify the current software release strategy.

Software Release Strategy

UFMS has employed an ongoing software release strategy designed to ensure maximum capability while ensuring we meet scheduled milestones. Upon the completion of the "Gap Closure Analysis" in the summer of 2003, the UFMS Change Control Board reviewed the recommended actions to close requirements gaps. Many resolutions and extensions could be employed within the target go-live without impacting schedule. However some requirement gap actions would not be implemented within the time line. We understood that some functionality would be in a future release. In February 2004 at

the time of the schedule review, we understood the need for perfect execution of remaining tasks to meet the target of October go-live. We decided to press on with that understanding. In May, based on another schedule review, we realized the need not only for perfect execution, but also that meeting the October go-live target would require heroic efforts on the part of HHS staff and contractors. We also were aware that the ability to schedule certain system components for phased deployment would preserve all work done to date. We wished to retain a sense of urgency, and deliberately pressed on. In September 2004, we realized the need to revise the UFMS deployment strategy to maximize the investment in UFMS. This decision came due to results from test readiness review (TRR) and advice by IV&V.

Following a detailed system readiness review, and in keeping with industry accepted program management practices for COTS system implementations, the UFMS leadership team decided to follow a phased approach to the pilot UFMS deployment at the CDC. This results in a release strategy for the CDC, which allows adequate time to address technical issues identified during testing and readiness review and to deploy a quality system in FY 2005. The overall deployment plan for UFMS is on schedule for completion in FY 2007.

Through September, detailed updates to the UFMS deployment strategy have been developed to manage the tightly integrated deployments at the CDC and the FDA. Integration and system testing, certain conversion activities, the development of a grants module and CAN realignment, select infrastructure tasks, and the staff assigned to those activities, will continue through October 2004. User acceptance testing, training, specific conversion activities, and infrastructure tasks will require updated deployment schedules for the period October 2004 through April 2005.

October 2004 will see a significant achievement for UFMS. The Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) will deploy the General Ledger and the

Accounting for Pay System (AFPS) for payroll activities. For the FDA, this represents over 60% of its dollars. With the inclusion of grants processing in the first quarter of FY 2005, CDC will process over 50% of its dollars and transactions. CDC and FDA will deploy the comprehensive Oracle/UFMS suite in April 2005. This follows the successful deployment of the NIH phase of UFMS in October 2003.

Conclusion

I hope that the information I have provided here today demonstrates how HHS has undertaken the UFMS project. We have utilized a number of industry best practices and have been schedule-driven. The benefits of this approach are that over the past three years we have been able to contain costs, contain scope and have made our workforce proceed on a daily basis with a sense of urgency. We understand the risks of this approach and have worked hard to mitigate and manage those risks. Unlike other systems development efforts that concentrate mainly on software and requirements, we have invested more of our energy in the people and institutions with the result that our people are being readied for the new system at a faster pace than would otherwise be possible. I believe our disciplined approach to the development of the UFMS will help ensure our ultimate success and that this information will be of value to this committee in their oversight efforts. At this time, I will be happy to answer any questions.

Appendix 1: HHS Response to GAO Recommendations for Action

1. **Determine the system capabilities that are necessary for the CDC deployment.**

   HHS has determined the system capabilities necessary for the CDC deployment over the last two years. Following details our approach.
   - HHS has developed the UFMS Core Financial Target Business Model description of business operations and design of how the operations will be performed at HHS across multiple, coordinated entities.
   - For HHS, the target business model for financial management describes how financial management will be performed including at the CDC.
   - UFMS has established a central information repository (Rational's RequisitePro), which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions (e.g. CDC, FDA), status and other management information) pertinent to the UFMS environment.
   - UFMS requirements are also documented in the UFMS Baseline Requirements document that was reviewed and approved by the PDC and Steering Committee.
   - Requirements not satisfied by the basic COTS package (Oracle U.S. Federal Financials), were assessed to determine an appropriate business solution. These "Gap" requirements identifying either a business process change or an Interface, Extension, Report or Conversion program were prioritized based on the UFMS release schedule; therefore CDC required capabilities were developed first.

2. **Identify the relevant requirements related to the desired system capabilities for the CDC deployment.**
   - UFMS has established a central information repository (Rational's RequisitePro), which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions (e.g. CDC, FDA), status and other management information) pertinent to the UFMS environment.
   - UFMS requirements are also documented in the UFMS Baseline Requirements document that was reviewed and approved by the PDC and Steering Committee.
   - Requirements not satisfied by the basic COTS package (Oracle U.S. Federal Financials), were assessed to determine an appropriate business solution. These "Gap" requirements identifying either a business process change or an Interface, Extension, Report or Conversion program were prioritized based on the UFMS release schedule; therefore CDC required capabilities were developed first.
   - For each Interface, Extension, Report and Conversion program identified as required for the CDC deployment a Functional Design Specification and a Technical Design Specification was developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
   - Each design constraint was captured in the central requirement repository and tied to the parent requirement that established the need for that particular interface, extension, report or conversion program at the CDC.
   - A release specific Requirements Tracability Verification Matrix (RTVM) has been built to verify that all requirements are met by the system deliverable and to demonstrate to HHS and outside parties that we have satisfied the system requirements allocated to the release (e.g. the CDC deployment).

3. **Clarify, where necessary, any requirements to ensure they (1) fully describe the capability to be delivered, (2) include the source of the requirement, and (3) are unambiguously stated to allow for quantitative evaluation.**
   - UFMS has established a central information repository, which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions (e.g. CDC, FDA, NIH), status and other management information) pertinent to the UFMS environment.

- UFMS requirements are also documented in the UFMS Baseline Requirements document that was reviewed and approved by the PDC and Steering Committee.
- Requirements not satisfied by the basic COTS package (Oracle U.S. Federal Financials), were assessed to determine an appropriate business solution. These "Gap" requirements identifying either a business process change or an Interface, Extension, Report or Conversion program were prioritized based on the UFMS release schedule; therefore CDC required capabilities were developed first.
- For each Interface, Extension, Report and Conversion program identified as required for the CDC deployment a Functional Design Specification and a Technical Design Specification was developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
- Each design constraint was captured in the central requirement repository and tied to the parent requirement that established the need for that particular interface, extension, report or conversion program at the CDC.
- Capabilities expressed in requirements that was assessed and demonstrated as being met by the basic COTS package have not been restated in additional detail. These "Fits" were verified through a series of Conference Room Pilots (CRPs).
- For each Interface, Extension, Report and Conversion program identified as required for the CDC deployment a Functional Design Specification and a Technical Design Specification was developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
- Each design constraint is captured in the central requirement repository and tied to the parent requirement that established the need for that particular interface, extension, report or conversion program.
- The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested during testing.

4. **Maintain traceability of the CDC-related requirements from their origin through implementation.**
   - HHS has from the beginning maintained a detailed history of the UFMS requirements that includes mapping each requirement to the specific Integrated Business Processes where that capability is used, the test scripts that are executed to verify compliance and the results of each test script.
   - A release specific Requirements Tracability Verification Matrix (RTVM) has been built to verify that all requirements are met by the system deliverable and to demonstrate to HHS and outside parties that we have satisfied the system requirements allocated to the release (e.g. the CDC deployment).
   - Through the RTVM, requirements management and testing are inseparably linked. In addition:
     - The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested.
     - The UFMS Final Baseline Requirements have been mapped to integrated business processes at the script level.
     - For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
     - The requirements module in TestDirector maintains the list of testable requirements, organized by module, in order to map requirements to Test Scripts.

5. **Use a testing process that employs effective requirements to obtain the quantitative measures necessary to understand the assumed risks.**
   - Each testing phase (CRPs, Unit-level testing, Integration Testing, System Testing, UAT) has a detailed plan developed that defines what will be tested, how it will be tested, where it will be tested, and who will test it. The results of each phase are recorded, defects noted, and corrective actions taken and functionality retested in each testing phase as necessary.
   - Testing is subject to extreme scrutiny and management oversight, with regular review meetings, daily summaries and detailed communication.

- All test scripts and results are rigorously tracked in TestDirector, and testing teams manage defects on a daily basis.
- The UFMS Final Baseline Requirements have been mapped to integrated business processes at the script level.
- To assess system stability and readiness we are tracking the following quality indicators:
    - Percent of release requirements tested
    - Number of requirement change requests
    - Percent of Integrated Process test scripts completed
    - Percent of test scenarios passed testing
    - Number defects detected
    - Number defects closed
- HHS instituted a series of Control gates (e.g. our Test Readiness Reviews [TRRs]) with defined go/no go criteria. These control gates provide HHS the ability to assess whether the UFMS project is fully prepared to begin the next phase. We check to determine that:
    - necessary documentation set is complete and up-to-date.
    - all hardware, software, and support tools are up-to-date and ready for use.
    - project controls, processes, and monitoring mechanisms are in place and fully understood.
    - any unresolved issues are fully addressed, including a discussion of any applicable risk mitigation strategies.

6. Validate that data conversion efforts produce reliable data for use in UFMS.

- Data conversions represent one of the riskiest areas of an ERP implementation. To mitigate this risk, UFMS is utilizing a series Mock conversions to perform dress rehearsals of the data conversion process.
    - The first mock conversion was the initial conversion and setup of necessary background data (e.g. vendor tables).
    - A series of additional mock conversions (3, 4, 5, and 6) further validated the conversion programs and data cleanup efforts. The data from one of these more mature mock conversions will be made available for system testing. Following these mock conversions, final adjustments are made to the conversion programs and additional data cleanup may occur.
    - A final test of the conversion programs is performed in the final month prior to go live and is used as the final data validation and reconciliation prior to User Acceptance Testing.
- The Accounting Treatment Team is examining each transaction to verify that the appropriate accounting codes are being used.
- HHS has brought in an independent vendor to review and validate the accounting actions preformed by UFMS.

7. Verify systems interfaces function properly so that data exchanges between systems are adequate to satisfy system needs.

- The focus of the test efforts is system-level, and focused on code developed for HHS specific extensions and interfaces.
- Each testing phase (CRPs, Unit-level testing, Integration Testing, System Testing, UAT) has a detailed plan developed that defines what will be tested, how it will be tested, where it will be tested, and who will test it.
- HHS has mapped each requirement to the specific Integrated Business Processes where that capability is used, the test scripts that are executed to verify compliance and the results of each test script recorded.
- Integrated Business Processes define data flow from “end-to-end”; from the input of data from feeder systems to the production of financial statements. These end-to-end processes are used at each level of testing; unit, integration and acceptance.

- The same code base is being used to build conversion programs and feeder system interfaces. This can be done because the same types of data is processed and results in the code being repetitively tested under a wider set of conditions than might otherwise be possible.
- UFMS built a comprehensive RTVM in which the requirements are mapped to Business Processes to Test Scripts, resulting in a full trace of requirements to the appropriate testable area of Oracle, and the method used to verify that each requirement has been satisfied. The RTVM is maintained in an industry standard COTS testing tool – Mercury's TestDirector.
- The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested.
- The UFMS Final Baseline Requirements were mapped to integrated business processes at the script level.
- For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
- The requirements module in TestDirector maintains the list of testable requirements, organized by module, in order to map requirements to Test Scripts.

8. Measure progress based on quantitative data rather than the occurrence of events.

- Since the inception of the project, HHS has focused on measuring three key program control facets instead of instituting outcome measures all along the implementation pathway. These areas are Quality, Cost, and Schedule.
- For two years now HHS has collected and assessed monthly Cost Performance Index data (CPI) and Schedule Performance Index (SPI) data to determine the degree to which the program is efficiently using budget and schedule.
- Critical path schedule analysis is used as a predictive schedule performance gauge to help our managers determine if schedule slippage is occurring.
    - any applicable risk mitigation strategies.
- Until HHS reached the testing phases of the UFMS implementation, most of the focus on quality dealt with UFMS documents and artifacts. We are now conducting a very through and rigorous process for quantifying the results of test defect tracking and resolution. To assess system stability and readiness we are tracking the following quality indicators:
    - Percent of release requirements tested
    - Number of requirement change requests
    - Percent of Integrated Process test scripts completed
    - Percent of test scenarios passed testing
    - Number defects detected
    - Number defects closed
- HHS instituted a series of Control gates (e.g. our Test Readiness Reviews [TRRs]) with defined go/no go criteria. These control gates provide HHS the ability to assess whether the UFMS project is fully prepared to begin the next phase. We check to determine that:
    - necessary documentation set is complete and up-to-date.
    - all hardware, software, and support tools are up-to-date and ready for use.
    - project controls, processes, and monitoring mechanisms are in place and fully understood.
    - any unresolved issues are fully addressed, including a discussion of

Before proceeding with further implementation of UFMS after CDC, GAO recommends the Assistant Secretary for Budget, Technology, and Finance following 14 actions:

1. **Develop and effectively implement a plan on how HHS will implement the disciplined processes necessary to reduce the risks associated with this effort to acceptable levels. This plan should include the processes, such as those identified by SEI and IEEE, that will be implemented and the resources, such as staffing and funding, needed to implement the necessary processes.**
   - HHS has an effective implementation plan that we have been executing since October 2002.
   - In October 2002 the HHS Steering Committee for UFMS approved a detailed Implementation Plan that identified the tasks, strategies, plans, and processes that would be required to implement UFMS.
   - In executing the approved UFMS implementation plan, HHS developed and is actively using the plans, strategies, processes, and lower level procedures it identified. These include the resource loaded Project Plan, Change Control Management Plan, Requirement Management Plan, Risk Assessment and Mitigation Plan, Quality Assurance Procedure, Interface Strategy, Conversion Strategy and Testing Approach.
   - Each plan, strategy, and process is tailored for HHS purposes but carefully designed to follow industry best practices, including those of Oracle itself. Tailoring is a common, accepted practice that is a recommended part of all development methodologies including those used by DoD.

2. **Develop a concept of operations, in accordance with recognized industry standards such as those promulgated by IEEE. The concept of operations should apply to all HHS entities that will be required to use UFMS. This concept of operations should contain a high-level description of the operations that must be performed, who must perform them, and where and how the operations will be carried out, and be consistent with the current vision for the HHS information system enterprise architecture.**
   - In July 2002 HHS developed a target business model, which has been a guiding document from its creation. This foundation document is the equivalent to the "Concept of Operations'.
   - The Core Financial Target Business Model is a description of business operations and design of how the operations will be performed at HHS across multiple, coordinated entities.
   - The target business model presents the target environment by each major JFMIP core financial functional area and associated major business. It also defines the interaction between OS at the Department-level and the component agencies (e.g., defining accounting policy), as well as the interaction between Program Support Center (PSC) and the PSC-serviced agencies (e.g., external reports submitted to the serviced agencies for review and approval).
   - HHS started with the "what" of the system. Over the course of the first year of the project, HHS held numerous workshops focused on the Case for Change, the High Level Business Processes, and finally the UFMS System Requirements Specification. These efforts both laid the groundwork for what would follow and continued the process of building the necessary organizational support for the project
   - Additional buy in was established through the use of Conference Room Pilots.
   - UFMS is at a higher level of Enterprise Architecture attainment than 97% of other agencies, having completed all of stage 2 readiness, along with significant components of stage 3. UFMS is a critical and defining part of the federal governments overall Enterprise Architecture.
   - Users of UFMS will access the system across HHSnet, the Department's new enterprise network.

3. **Implement a requirements management process that develops requirements that are consistent with the concept of operations and requires that the resulting requirements have the attributes associated with good requirements that include for each requirement (1) fully describing the functionality to be delivered, (2) including the source of the requirement, and (3) stating the requirement in unambiguous terms that allows for quantitative evaluation.**

- HHS has an established UFMS requirements management process that is a detailed, systematic approach to identify, document, organize, communicate, and manage changes in the requirements applicable to the UFMS Program.
- UFMS established a central information repository, which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions, status and other management information) pertinent to the UFMS environment. UFMS requirements are also documented in the UFMS Baseline Requirements document that was reviewed and approved by the PDC and Steering Committee.
- HHS has from the beginning maintained a detailed history of the UFMS requirements that includes mapping each requirement to the specific Integrated Business Processes where that capability is used, the test scripts that are executed to verify compliance and the results of each test script.
- For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
- Each design constraint is captured in the central requirement repository and tied to the parent requirement that established the need for that particular interface, extension, report or conversion program.
- The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested during testing.

4. **Maintain traceability of requirements among the various implementation phases from origin through implementation.**
   - HHS has from the beginning maintained a detailed history of the UFMS requirements that includes mapping each requirement to the specific Integrated Business Processes where that capability is used, the test scripts that are executed to verify compliance and the results of each test script.
   - UFMS has established a central information repository, which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions, status and other management information) pertinent to the UFMS environment in a COTS product designed for this purpose: RequisitePro (ReqPro).
   - Requirements and their associated attributes have been developed, adapted, and reused, which results in an efficiency that lowers the effort and cost of development at each site, as well as subsequent iterations and related projects.
   - For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
   - UFMS has built a comprehensive RTVM in which the requirements are mapped to Business Processes to Test Scripts, resulting in a full trace of requirements to the appropriate testable area of Oracle, and the method used to verify that each requirement has been satisfied. The RTVM is maintained in an industry standard COTS testing tool – Mercury's TestDirector.
   - The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested.
   - The UFMS Final Baseline Requirements have been mapped to integrated business processes at the script level.
   - The requirements module in TestDirector maintains the list of testable requirements, organized by module, in order to map requirements to Test Scripts.

- **Confirm that requirements are effectively used for:**
   5. **determining the functionality that will be available in UFMS at a given location,**
   6. **implementing the required functionality,**
   7. **supporting an effective testing process to evaluate whether UFMS is ready for deployment,**
   - UFMS established a central information repository, which includes over 2100 requirements and their attributes (e.g. requirement type, origin, applicable Operating Divisions, status and other management information) pertinent to the UFMS environment. UFMS requirements are also documented in the

UFMS Baseline Requirements document that was reviewed and approved by the PDC and Steering Committee.

- A Requirements Tracability Verification Matrix (RTVM) has been built to verify that all requirements are met by the system deliverable and to demonstrate to HHS and outside parties that we have satisfied the system requirements. Through the RTVM requirements management and testing are inseparably linked. In addition:
    - The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested.
    - The UFMS Final Baseline Requirements have been mapped to integrated business processes at the script level.
    - For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
    - The requirements module in TestDirector maintains the list of testable requirements, organized by module, in order to map requirements to Test Scripts.

8. validating that data conversion efforts produce reliable data for use in UFMS, and

- Data conversions represent one of the riskiest areas of an ERP implementation. To mitigate this risk, UFMS is utilizing a series Mock conversions to perform dress rehearsals of the data conversion process.
    - The first mock conversion was the initial conversion and setup of necessary background data (e.g. vendor tables).
    - Second and third mock conversions further validated the conversion programs and data cleanup efforts. The data from mock conversion 3 was made available for system testing in August. Following mock conversion 3, final adjustments are made to the conversion programs and additional data cleanup may occur.
    - A final test of the conversion programs (e.g. Mock conversion 4) is performed in the final month prior to go live and is used as the final data validation and reconciliation prior to User Acceptance Testing.
- The Accounting Treatment Team is examining each transaction to verify that the appropriate accounting codes are being used.
- HHS has brought in an independent vendor to review and validate the accounting actions preformed by UFMS

9. verifying that systems interfaces function properly so that data exchanges between systems are adequate to satisfy each system's needs.

- The focus of the test efforts is system-level, and focused on code developed for HHS specific extensions and interfaces.
- The Finance, Business, and Program leaders, have been active in the project and its design from the beginning, are heavily involved in testing the end product.
- Each testing phase (CRPs, Unit-level testing, Integration Testing, System Testing, UAT) has a detailed plan developed that defines what will be tested, how it will be tested, where it will be tested, and who will test it.
- UFMS built a comprehensive RTVM in which the requirements are mapped to Business Processes to Test Scripts, resulting in a full trace of requirements to the appropriate testable area of Oracle, and the method used to verify that each requirement has been satisfied. The RTVM is maintained in an industry standard COTS testing tool – Mercury's TestDirector.

10. Develop and implement a testing process that uses adequate requirements as a basis for testing a given system function.

- Testing of COTS based systems has a significantly different focus from the testing of custom developed systems. Among the keys reasons for choosing a COTS based implementation is to

leverage the investment made by the COTS vendor in producing a mature product that has been thoroughly tested. Very mature products, such as Oracle U.S. Federal Financials, require little or no low-level testing.

- The focus of the test efforts is system-level, and focused on code developed for HHS specific extensions and interfaces.
- The Finance, Business, and Program leaders, have been active in the project and its design from the beginning, are heavily involved in testing the end product.
- Each testing phase (CRPs, Unit-level testing, Integration Testing, System Testing, UAT) has a detailed plan developed that defines what will be tested, how it will be tested, where it will be tested, and who will test it.
- UFMS has built a comprehensive RTVM in which the requirements are mapped to Business Processes to Test Scripts, resulting in a full trace of requirements to the appropriate testable area of Oracle, and the method used to verify that each requirement has been satisfied. The RTVM is maintained in an industry standard COTS testing tool – Mercury's TestDirector.
- The RTVM is used to track all UFMS requirements and design constraints and verify they are all tested.
- The UFMS Final Baseline Requirements have been mapped to integrated business processes at the script level.
- For each Interface, Extension, Report and Conversion program a Functional Design Specification and a Technical Design Specification is developed. These design documents containing specific business rules (design constraints) that state unambiguously the functional UFMS must provide.
- The requirements module in TestDirector maintains the list of testable requirements, organized by module, in order to map requirements to Test Scripts.

- **Formalize risk management procedures to consider:**
  11. **all risks currently applicable to the UFMS project are identified, and**
  12. **that risks are only closed after the risk is no longer applicable rather than once management has developed a mitigation strategy.**
  - The UFMS project relies on a well-implemented risk management process that uses business best practices developed by leading providers across market segments.
  - The UFMS risk management process is the result of a Cooperative Research and Development Agreement (CRADA) between BearingPoint and the Software Engineering Institute (SEI) to co-develop a best practice based risk management program.
  - The continuous risk management process that is followed by the UFMS program includes weekly meetings with HHS Program Management to review current and past risks, update and refine mitigation strategies, and assess issues that might become risks to the success of UFMS.
  - HHS adjusted the risk management processes to keep all risks in an open status until they are either realized or an appropriate mitigation has been successful. In addition, the UFMS PMO has decided to maintain listings for both open and closed risks to maintain their visibility. It is important to note that the closed risks highlighted by GAO included risks (e.g., funding) that the UFMS PMO felt could be closed for one particular year and re-opened if the risk occurred during subsequent years within the life of the project.

13. **Develop and implement a program that will identify the quantitative metrics needed to evaluate project performance and risks.**
  - For two years now HHS has collected and assessed monthly Cost Performance Index data (CPI) and Schedule Performance Index (SPI) data to determine the degree to which the program is efficiently using budget and schedule.
  - Critical path schedule analysis is used as a predictive schedule performance gauge to help our managers determine if schedule slippage is occurring.
  - To assess system stability and readiness we are tracking the following quality indicators:
    - Percent of release requirements tested
    - Number of requirement change requests

    - Percent of Integrated Process test scripts completed
    - Percent of test scenarios passed testing
    - Number defects detected
    - Number defects closed
- The continuous risk management process that is followed by the UFMS program includes weekly meetings with HHS Program Management to review current and past risks, update and refine mitigation strategies, and assess issues that might become risks to the success of UFMS.

14. Use quantitative measures to assess progress and compliance with disciplined processes.

- Our focus has been on measuring three key program control facets instead of instituting outcome measures all along the implementation pathway. These areas are quality, cost, and schedule.
- For two years now HHS has collected and assessed monthly Cost Performance Index data (CPI) and Schedule Performance Index (SPI) data to determine the degree to which the program is efficiently using budget and schedule.
- Critical path schedule analysis is used as a predictive schedule performance gauge to help our managers determine if schedule slippage is occurring.
- To assess system stability and readiness we are tracking the following quality indicators:
    - Percent of release requirements tested
    - Number of requirement change requests
    - Percent of Integrated Process test scripts completed
    - Percent of test scenarios passed testing
    - Number defects detected
    - Number defects closed

To help ensure that HHS reduces risks in the agency wide IT environment the following 7 actions should be taken**:**

1. **Conduct assessments of operating divisions' information security general controls that have not been recently assessed.**
   - HSS has progressively increased key system security metrics reported in the FISMA quarterly report. Key items for the 3rd quarter of 2004 included:
     - 96% of systems have been assessed for risk.
     - 95% of systems have security plans.
     - 93% of systems have been certified and accredited
   - A Managed Security Service (MSS) using an automated intrusion detection tool to monitor, detect, and report local and Department-wide system security weaknesses has been implemented.
   - Currently working to establish an automated centralized self-assessment process using the Security Self Assessment Tool (SSAT). Current participants include: NIH, HRSA, AHRQ, IHS, FDA, and AoA.

2. **Establish a comprehensive program to monitor access to the network, including controls over access to the mainframe and the network.**
   - A Department-wide IT security program has been developed and implemented, Secure One HHS that incorporates Secretary Thompson's One HHS Vision.
   - A Managed Security Service (MSS) using an automated intrusion detection tool to monitor, detect, and report local and Department-wide system security weaknesses has been implemented.
   - Developed a cohesive and up-to-date set of HHS IT Security Policies.
   - HHS IT security has developed in-depth guides in 13 specific areas.
   - UFMS is nearing completion of its Security Test & Evaluation Plan, System Security Plan and Standard Operating Procedures that include the specific processes that will be used to monitor and maintain user access to the system.
   - UFMS will contain an automated feature to disable user accounts that have not been active for a designated period of time.

- **Verify that the UFMS project management staff has all applicable information needed to fully ensure a comprehensive security management program for UFMS. Specifically, this would include identifying and assessing the reported concerns for all HHS entities regarding key general control areas of the information security management process:**
  3. **entity-wide security planning,**
  4. **access controls,**
  5. **system software controls,**
  6. **segregation of duties, and**
  7. **application development and change controls.**
  - A Department-wide IT security program has been developed and implemented, Secure One HHS that incorporates Secretary Thompson's One HHS Vision.
  - A Managed Security Service (MSS) using an automated intrusion detection tool to monitor, detect, and report local and Department-wide system security weaknesses has been implemented.
  - Developed a cohesive and up-to-date set of HHS IT Security Policies.
  - HSS has progressively increased key system security metrics reported in the FISMA quarterly report. Key items for the 3rd quarter of 2004 included:
    - 96% of systems have been assessed for risk.
    - 95% of systems have security plans.
    - 93% of systems have been certified and accredited
  - HHS IT security has developed in-depth guides in 13 specific areas.
  - UFMS has established end user roles & responsibilities which are specifically designed to maintain a separation of duties

- UFMS has a detailed Change Control Management Plan that defines the process by which changes to documents, software, hardware, and infrastructure must follow and the specific levels of approval required.
- UFMS is using PMOnline to capture and track all change requests, issues, and risks.
- UFMS is using TestDirector to capture and track all problems identified in the UFMS software and hardware.

To help improve human capital initiatives the following 4 actions should be taken:

1. **Assess the key positions needed for effective project management and confirm those positions have the human resources needed. If needed, solicit the assistance of the Assistant Secretary for Budget, Technology, and Finance to fill key positions in a timely manner.**
   - Staffing UFMS is a recognized at the program level as being a risk and is being addressed in accordance with our Risk Management Plan.
   - The Deputy ASBTF's have been conducting weekly status sessions with UFMS program leadership that include human resource needs.
   - I (ASBTF) have contacted the leadership of the HHS operating divisions requesting their support.

- **Finalize critical human capital strategies and plans related to UFMS such as the:**
   2. **skills gap analysis,**
   3. **workforce transition strategy, and**
   4. **training plans.**
   - Preparation of a Skills Gap Analysis, Workforce Transition Strategy, and development of Training Plans are complete for the CDC.
   - Instructor lead, classroom based training of the CDC workforce has been on going since June of this year (2004).
   - A COTS product, OnDemand is being used to provide desktop level learning aids for all UFMS users.
   - A Learning Lab has been established at the CDC to enable CDC employees to practice and maintain what they have learned.
   - Skills Gap Analysis, Workforce Transition Strategies, and Training Plans for the FDA, and PSC are currently being worked on at various levels of completion as laid out in the UFMS project plan.